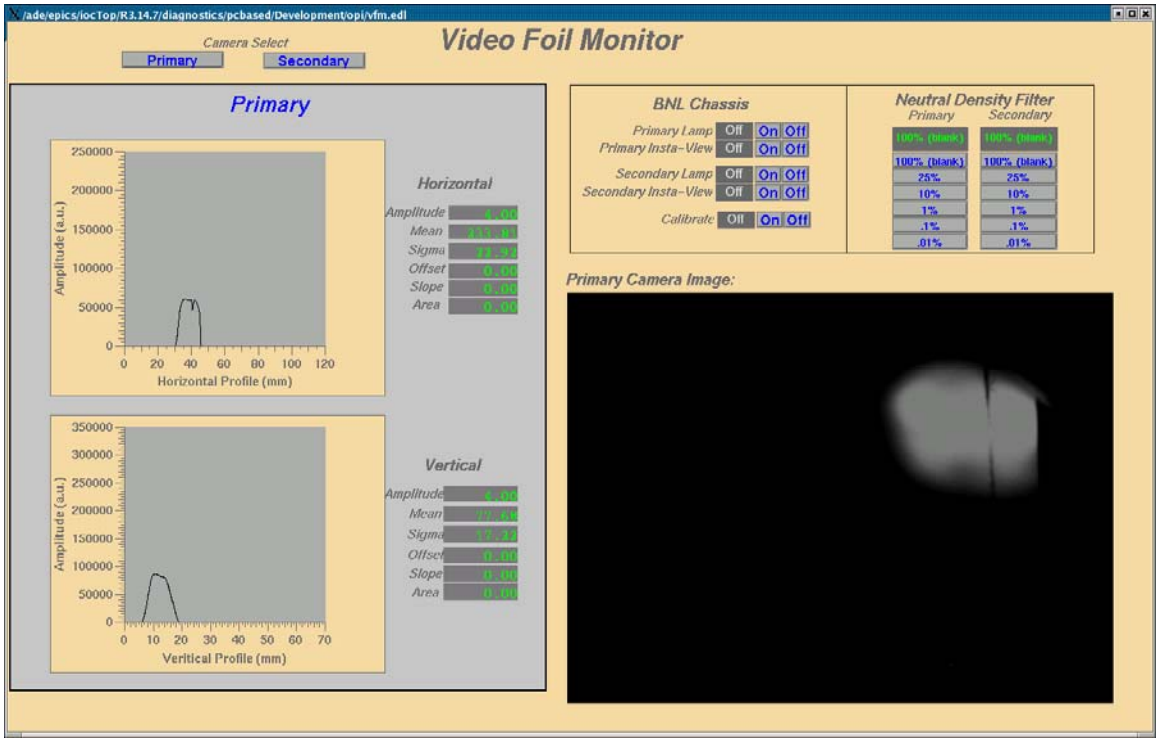
ASD Weekly Highlights for the Week Ending 13-Jan-2006

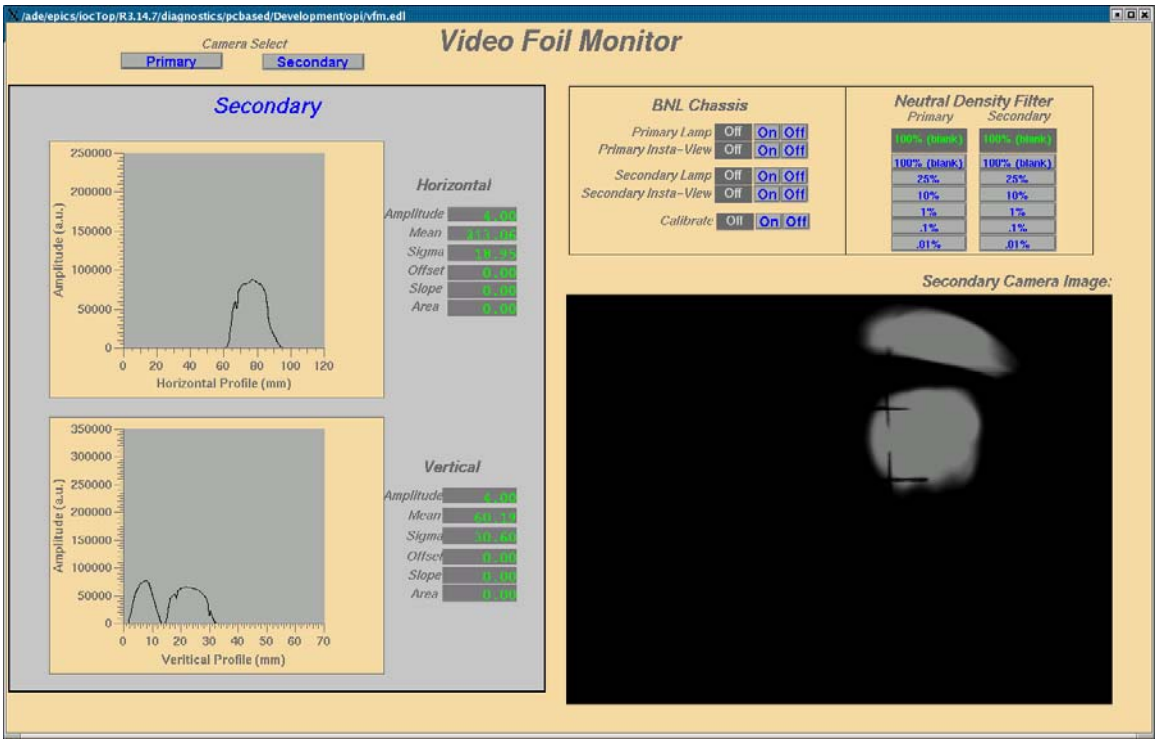
Operations

- On Tuesday July 10, Richard Werbeck and Sandra Kennedy inspected the completed ARR Pre-Start Action Items from the HEBT-Ring-Extraction Dump ARR. They agreed that all items were closed and recommended to the ARR Chair that the ARR Committee recommend to DOE that the SNS be granted permission to commission the HEBT-Ring-Extraction Dump.

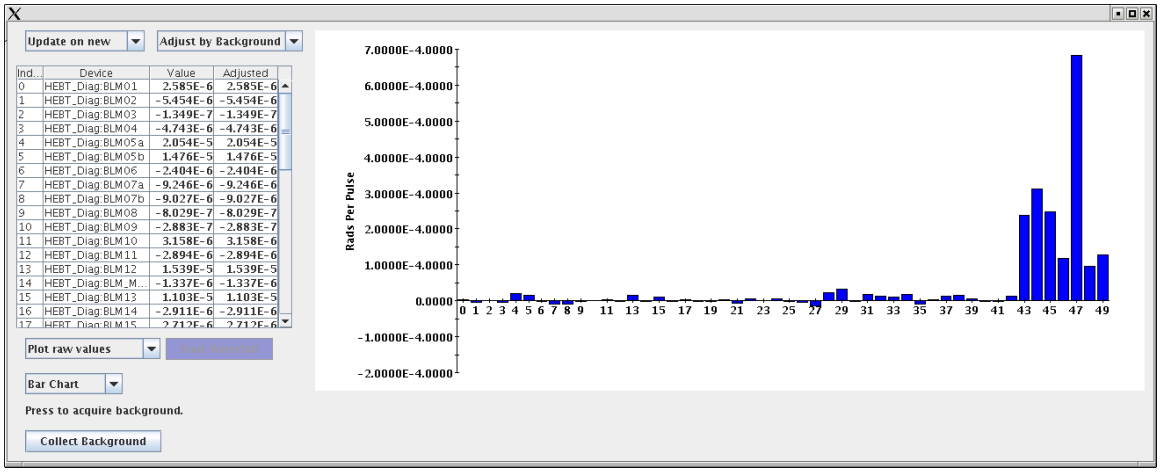
- On Thursday July 12, all HEBT-Ring-Extraction Dump systems were signed off as complete in the Operational Approval for Commissioning (OPM 6.E-19). This was presented to Les Price, the DOE SNS Project Director, allowing for the start of commissioning. The beam had been available in the LINAC dump line for several days. On Thursday night the beam was directed into the HEBT and Ring Injection Dump line. The beam was transported with relative ease to the Ring Injection Dump. By Friday morning we had demonstrated:



Beam to the Primary Injection Foil

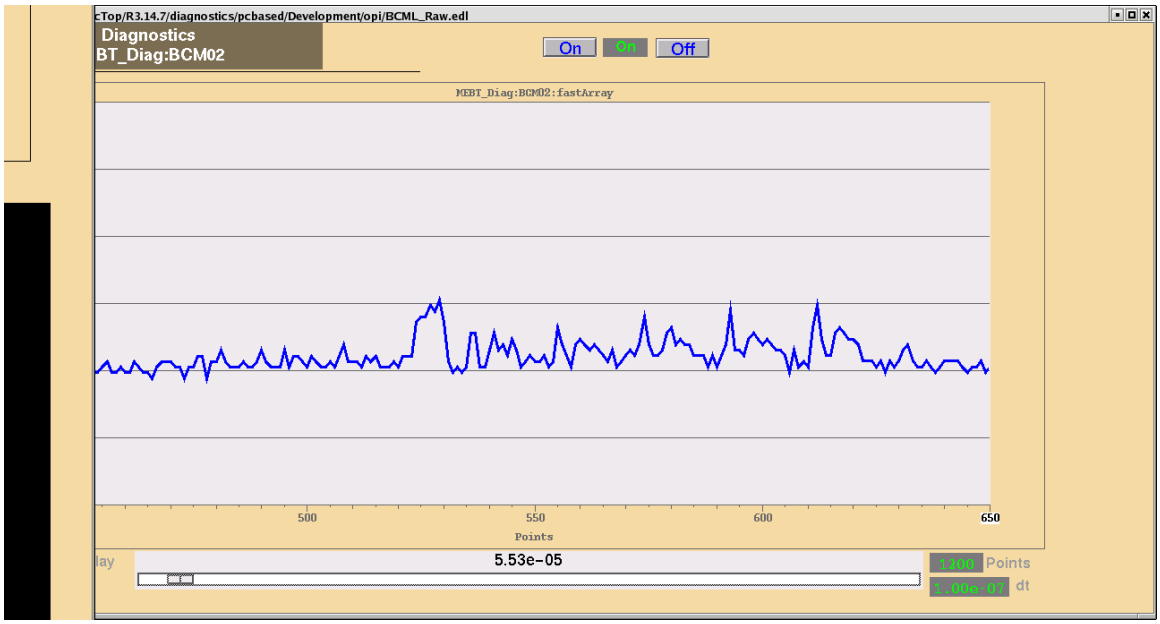


Beam to the Secondary Injection Foil



Fairly Small Injection Line Losses

- At this time we attempted the first injection of a mini-pulse into the Ring with the following result:



Minipulse in Ring shown with ringing of kickers

- Following this success we suspended beam operation to fix a number of devices. There was significant success over the 3 day weekend of the 14-16 which will be reported in the Weekly Report for the week ending January 20.

- Additionally, ASD Operations monitored the 72 hour test of Mercury circulation in the Target Loop from the Central Control Room.

Accelerator Physics

Electrical Systems

SRF Facility

Survey and Alignment

Diagnostics

- Ring diagnostics installation continues. Emphasis was to get all diagnostics for the Jan-06 run ready and tested. 100% of BLMs are tested and ready.
- All BPMs are installed, calibrated and ready for beam. BPM timing requires fine tuning with beam.
- We observe 1 MHz RF on all BCMs. All BCMs are calibrated and ready for Beam. BLMs are ready with the exception of one HV cable. That is replaced and needs testing.
- All Neutron detectors, Fast BLMs are ready and tested. Three wire scanners are installed in the HEBT and tested. We need to add Schmitt trigger circuit to the limit switches before they could be used with beam. Video foil system is also ready for the beam.

Cryo Systems

Mechanical Systems

Shielding progress.

Ring Systems Installation Activities

- The HEBT Momentum Scraper Assemblies were installed.
- The Ring Injection Thick Foil Assembly was installed.
- The Ring Injection Stripper Assembly was installed.
- The Ring Injection Dump rupture disc was installed completing the RID system.
- The Ring Primary Collimator shielding was installed
- The RTBT EDUMP flight tube continues to pump down.
- The RTBT EDUMP window shielding was installed.

Ring Water Systems Installation

- The HEBT Momentum Dump Cooling System was checked-out and placed back in operation.
- The Ring magnets' flow control valves were exchanged to resolve earlier flow issues.
- The Ring service building PS's control valves were exchanged to resolve earlier flow issues.
- The Ring Collimator Closed Loop Cooling System installation was completed placed in operation.
- The RTBT service building DI system was serviced and placed back in operation

RF Systems

Ring RF System

- Completed final timing adjustments to the Low Level RF hardware.
- Added a remote clear function to the MPS Chassis. The chassis has latching lights on the front panel. We can now reset these from the Main Control Room.
- Continue to investigate RF System interaction with Beam Diagnostics systems.

Ion Source

Controls

- This was the week of the start of the Ring Commissioning run. The controls team completed and tested a number of loose ends related to foils, scrapers, power supplies, MEBT Chopper, the RID, BLMs, PPS and MPS inputs; and submitted many completed test plans. It was discovered that EMI noise from the extraction kickers completely overwhelmed all the ring power supply MPS inputs, and in a veritable "tour de force" the controls MPS team applied filters to all MPS inputs in the Ring Service Building (>300!!) in half a day, making no errors, and with the result that by Friday afternoon the entire system was operational with the kickers operating. As the weekend and the run began, the control system was fully operational, and the controls team was looking forward to an early taste of champagne.

- Several strategies for using the control system to mitigate the large "dark currents" discovered last week were considered. The most effective would be to use the LEBT chopper to eliminate any current when the ion source is off. To this end a change to the timing system was ready for deployment by week's end, but the success of alternative mitigation strategies at the source combined with conservatism about rebooting the timing system resulted in a decision to delay this deployment until next week.

- A new LLRF engineering screen was deployed that shows all the linac LLRF loop status, graphs of amplitudes and errors and provides buttons to control the Adaptive Feed Forward (AFF) systems.

- The focus of installation and testing activity moved to the Target, where teams of I&C engineers and technicians were deployed to assist with those subsystems. Checkout and programming of the

Target PPS system continued as did design of the Instrument PPS for Beamlines 4a and 4b.